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U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
 CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
 Division of Forest Insect Research

MESQUITE INSECTS
 DEATH VALLEY NATIONAL MONUMENT
 APRIL 1957
 APPRAISAL SURVEY

A borer problem in mesquite in the Death Valley National Monument was called to our attention in December 1956 by M. E. Thede of the National Park Service, with a request that an inspection of the damage be made. Therefore, R. C. Hall made an inspection and appraisal on April 24 and 25.

The damage is largely confined to the area around the monument headquarters, family dwelling area, the public camp area near Furnace Creek, and the Furnace Creek Ranch area. The problem consists of from a few dying limbs in mesquite to scattered mortality of entire trees all infested with mesquite borers.

Insects Found

The principal borer found was a flatheaded borer believed to be Chrysobothris octocola Lec. Other associated borers were two belonging to the powder-post group: a very large species, Apatides fortis Lec., about three-quarters of an inch long; and another smaller one, probably Xylobiops sp. In addition to the borers, a looper was found defoliating mesquite. Larvae were collected but have not as yet been determined. Borer-infested material was brought into the laboratory and placed in rearing, but to date no emergence has occurred. According to Craighead,^{1/} the flatheaded borer adult lays its eggs on the bark. From these develop flattened yellowish-white larvae resembling a horseshoe nail in appearance that bore into the bark to the surface of the wood. The larvae mine between the bark and wood grooving the sapwood. Their mines are filled with fine, tightly packed frass that does not easily fall out and, when it does, it loosens in cakes. The larvae spend most of their life cycle in the cambium region and only enter the deeper sapwood when fully mature and ready to transform to pupae. There is apparently only one generation a year.

Current Insect Status

The inspection showed that considerable mortality is occurring in mesquite in all areas examined, particularly in the public campground. (Fig. 1) In the campground area a high percentage of the trees already have been killed and practically every tree left has portions of the crown killed, with indications of very heavy flatheaded borer attacks

^{1/} Craighead, F. C. 1922. Protection of Mesquite Cordwood and Posts from Borers. Farmers' Bull. 1197, U.S.D.A. 12 pp., illus.

at the time of the inspection. The Park Service has been cutting and burning infested portions of mesquite in their high-use areas in an effort to control the insects, but still loss continues at a high level.

Park Service personnel mentioned that heavy stripping of mesquite by a defoliator had been observed around the headquarters area early in the spring. The heavily stripped trees had refoliated and showed little evidence of defoliation at the time of the April examination. Some evidence of recent defoliation was observed in the Furnace Creek Ranch area where several looper collections were made.

Control Possibilities

There are a number of problems concerned with the possibility of controlling the flatheaded borer in mesquite. The first is the fact that this borer has never before been reported as a primary tree-killer. Species of the genus Chrysobothris generally are considered as secondary insects, restricting their attacks to weakened, dying, or dead trees. It is suspected, therefore, that the primary problem in the dying of mesquite is something other than borers. One possibility is the lowering of the underground water table through domestic use of water. Another possibility is the weakening effect of defoliation by the looper.

The first step in trying to solve this problem would appear to lie in determining the primary factor responsible for weakening the mesquite to the point where the flatheaded borer can make its successful attacks.

Discussion

The problem of decadent and dying mesquite in the Death Valley National Monument is serious, because the loss of the trees detracts from the usefulness certain areas, particularly where the trees are valued most for shade and ornamental purposes. This problem is expected to increase in importance when new areas of mesquite around the Furnace Creek Ranch area are further developed for campsites. (Figs. 2 and 3)

The solution does not appear to be a simple one, and it is suggested that studies be considered to determine the underlying causes of weakening mesquite to the point where they are attacked and killed by borers.

Attachment: Figs. 1,2,and 3.

June 13, 1957
Berkeley, California

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Figure 1.--Mesquite in camp-ground area very badly deteriorated. This represents about an average condition for the few trees left in the area.

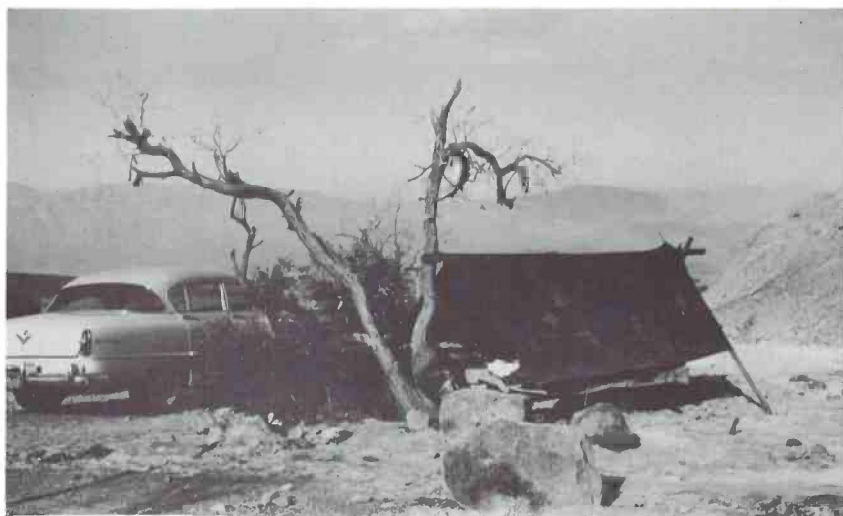


Figure 2.--A mesquite tree about 50 percent killed near Furnace Creek Ranch.

Figure 3.--Several mesquite trees completely killed in the extensive area north and west of Furnace Creek Ranch. All the trees infested with flatheaded borers.

